Who we are
interact is a research group focused on issues related to the interaction of people and computing systems; building systems with people in mind. Please drop by our web site or contact us for more information.

Project Updates
Navigating Large-Scale Virtual Spaces.

Work continues on developing a full-scale high-fidelity model of a portion of Ft Ord for our upcoming navigation training transfer study. We are attempting to use exported data from ESRI's ArcInfo GIS tools to be imported into Coryphaeus Software's EasyTerrain tool for manipulation and triangulation. There are two parts to this task; one to import elevation data and another to import topographical data, especially the roads and paths in the region. It's been an adventure doing data conversion calisthenics this past month but we think we may be over this hurdle.

This brings up some interesting points as to the research issues in modeling real environments for training exercises. If we can show that VE exposure is a useful tool for environment familiarization in different types of spaces, it will not be particularly useful if creating the virtual environment models is this painful and time consuming. We'll find out more in the near future as we begin to model the inside of Hermann Hall.

Nomadic Computing and Wireless Systems.

We ran into an obstacle recently when we found that the Metricom wireless bridge that we are using temporarily while we await installation of our permanent antenna is incompatible with the Internet Enabler software on the Apple Newton MessagePad. It seems to work fine with any laptop system but not handhelds -- even Windows CE devices. The temporary fix to this will be to "wire" our "wireless" applications until this can be remedied. Stay tuned, we go again with CS3130 Wireless Mobile Computing in the summer quarter so we hope for better network support by then.

Other News
It was clear from the content at the Virtual Reality Annual International Symposium (VRAIS) this past week in Albuquerque that the virtual environment research community has decided that evaluation is a necessary part of development after all. There were still lots of papers involving implementations of one sort or another but most included some form of human performance evaluation.

One of the most interesting items involved a brain-body actuated control mechanism for virtual flight. The user moved through a virtual world attempting to stay on a visual path while controlling movement with electroencephalographic (EEG) and electromyographic (EMG) biopotentials. Control was shown to be crude but possible. This work suggests other uses of biocontrol where high fidelity is not necessarily needed.

Thesis Topics
If you are interested in working on a thesis in one of these areas, or in any other area of human-computer interaction which may be of interest to you, please visit the website and get in touch with Dr. Rudy Darken <darken@cs.nps.navy.mil> or Dr. Kip Krebs <wkrebs@nps.navy.mil>. Each month, we will include a few thesis topics in this newsletter of special interest.

1. Meteorological Models of the Monterey Peninsula.
Dr. Doug Miller of the Meteorology Department has a number of meteorological data models of the area. This project would require a visualization of Digital Elevation Terrain Data (DTED) of the local area and an incorporation of these weather models. There are a number of interesting issues here related to how to view such data which has both spatial and temporal attributes.
Contact Darken.

2. Adaptable Interfaces for Specialized Displays and Controls
When we construct web pages today, we provide information as to *exactly* what the page will look like. We specify fonts, styles, image sizes and locations, etc. But not all web browsing devices are equal in their capacity to show what the creator has labored to produce. WebTV, PDAs, and other devices must filter or otherwise alter what is currently made available. What is needed is a generalizable way for devices to make use of web content without necessarily showing it exactly as intended. In other words, we want an adaptable interface as determined by the device and user rather than by the page publisher.
Contact Darken or Lewis.

Course Offerings
Spring 1997
CS4473 Virtual Worlds and Simulation Systems (3-2)
Instructor: Darken
Prerequisites: none
http://interact.nps.navy.mil/darken/Academics/CS4473
This course will include a survey of virtual environment technology, from the hardware it entails, to applications and training systems. We will discuss methods of system construction and the strengths and limitations of different I/O devices and interaction techniques. Our objective will be to investigate and study the state of the art in virtual environments;
o   What problems have we tried to solve thus far?
o   Who's problems have we tried to solve thus far?
o   Are these tasks and users suitable to this solution?
o   How do we know a "training" system actually trains what it's supposed to?
o   Are there any applications which have proven the value of the technology?
o   What makes one system or technique better than another?
The course will be conducted as a seminar. Students will read current research literature and will either write a survey paper or implement a prototype system and evaluate it.

Spring 1997
CS4202 Computer Graphics (3-2)
Instructor: Zyda
Prerequisite: CS2971, CS3300, CS3700 or consent of the instructor.
An introduction to the principles of the hardware and the software used in the production of computer generated images. The focus of the course is a major design project utilizing the departmental computer graphics facilities. The course is intended for Computer Science students proficient in the development of software systems.

Summer 1997
CS4203 Interactive Computing Systems (3-2)
Instructor: Darken
Prerequisites: CS3300 or consent of the instructor
http://interact.nps.navy.mil/darken/Academics/CS4203
This course offers a complete study of human-computer interaction. From conventional desktop interfaces to virtual environments to multimedia. Our

focus is not on implementation but rather on design and evaluation.
o Recognize and describe human factors issues relevant to designing human-computer interfaces
o Understand the relationship between human error and poor design and how to circumvent both
o Understand the tradeoffs of training costs versus usability engineering costs
o Design a human-computer interface with an iterative, design/prototype/evaluate development process and apply specific design guidelines as part of this process
o Select appropriate interaction devices and techniques from among alternatives
o Select appropriate dialogue style from among alternatives
o Critique existing or proposed human-computer interfaces using concepts taught in the course
Students will perform a step-by-step project throughout the quarter taking a design from its inception, to a rough prototype, to a functional prototype and will evaluate it with real users.

Summer 1997
CS3130 Wireless Mobile Computing (3-2)
Instructor: Darken
Prerequisites: CS3300 or consent of the instructor
http://interact.nps.navy.mil/darken/Academics/CS3130/
Portable computing devices are now being used for many applications previously accomplished by larger desktop computers or dedicated small devices. Some of these portable computing devices contain powerful RISC CPUs, user-accessible flash RAM storage, networking and peripheral connectivity, handwriting recognition, and built-in infrared networking capabilities.
Developing software and usable applications for these portable devices is much different than designing and implementing applications for desktop systems due to their novel architectures, wireless networking capability, and requirements for rapid development cycles.
Projects will focus on the intersection of three core technologies: PDA's, wireless communications, and GPS positioning.
o Learn about PDA's (Personal Data Assistants) and other portable devices
o Learn a functional, object-oriented language for development on PDA's
o Integrate wireless networking capabilities with PDA's
o Integrate GPS (Global Positioning System) with PDA's
o Develop a prototype that exploits the strengths of all three technologies
o Have fun learning about and using technology few others have ever experienced